XXII. *Remarks on the Genera Orbicula and Crania of Lamarck, with Descriptions of two Species of each Genus; and some Observations proving the Patella distorta of Montagu to be a Species of Crania. By Mr. George Brettingham Sowerby, F.L.S.*

Read March 17, 1818.

The opportunity of addressing the following observations to the Linnean Society of London, has been lately afforded me by a circumstance, very common indeed in its kind, though at the same time I may be allowed to say fortunate, as far as regards the subject of the present communication and its results.

Among a quantity of ballast lately brought to the parish of Lambeth for mending the roads, were several stones, evidently collected on the sea-coast, and which, in the numerous irregularities of their surfaces and the cavities with which they were pervaded, contained a considerable number of small shells, some of them of singular characters and of uncommon and little known species. I have made several attempts to ascertain what part of the world the ballast was brought from, but all my inquiries have hitherto proved fruitless; though from some slight circumstances I have reason for supposing that it has been brought from the northern coast of Africa. I could not, however, consider this a sufficient reason for withholding the information I thus have it in my power to communicate, more especially, as the discovery among the shells thus procured, of a species of Lamarck's genus *Orbicula*, has led to a further discovery of the real character and

proper

proper situation in the natural system of the shell described by Montagu under the name of *Patella distorta*, *Linn. Trans.* xi. *p.* 195. *t.* 13. *f.* 5.

The first specimen I had ever seen of the genus *Orbicula* was sent to my father some months ago by Mr. Holloway, from Portsmouth; it was found by him precisely under the same circumstances as those under which I have myself obtained specimens: but this specimen was so very much distorted, and withal so new in its appearance, that it was impossible to form an opinion upon it.

The next specimen of this genus that it has fallen to my lot to examine, was in the possession of Mr. Mawe, from whom I am informed it has passed into Lady Wilson's cabinet: this is another species, very much resembling, if it be not, *Orbicula norvegica*; it is larger than any of the former, and was attached to the convex outside of a grey flint pebble, and not defended by a cavity in the stone. The dried animal remains within, by which we are enabled to show that it belongs to the family of terebratuloid shells, the *Branchiopoda* of Cuvier.

The discovery above mentioned, of a number of specimens of the genus, has led to a more intimate acquaintance with its characters and habits; and as the means are thus offered to our use, it may not be improper to give an amended generic character, and such additional information concerning the *genus* as I have been able to collect from the specimens themselves.

ORBICULA.

Bivalve, inequivalve, nearly orbicular, compressed, fixed; *upper valve* patelliform, with four internal muscular impressions, two rather large and approximating near the centre, and two smaller and more distant placed near the posterior margin. *Lower valve* flat, with corresponding muscular impressions

pressions and a rather obtuse process placed at the inner end of a fissure near the centre. Hinge none.

The animal has two ciliated arms or tentacula, and adheres by a muscle or ligament, which passes through the fissure.

The character of the genus given by Lamarck is as follows:

"Orbicule. Coquille orbiculaire, applatie, fixée et composée de deux valves, dont l'inférieure très mince adhére aux corps qui la soutiennent. Charnière inconnue.

"Orbiculier. Acephale sans pied et sans prolongemens tubuleux; mais muni de deux bras alongés, frangés, qui s'étendent au gré de l'animal, et qui rentrent dans la coquille en se roulant en spirale."

It is here observable, that Lamarck says the animal has no foot; but I apprehend it would not be improper to call the muscle or ligament which passes through the fissure near the centre of the lower valve, and which is the only part by which the shell is attached, by that name; it certainly very much resembles the foot of the animal inhabitant of *Patella*.

The only species of this genus, with which we are at present acquainted, either by description or figure, is the one upon which Lamarck has founded the genus: he calls it *O. norvegica*, and it is described and figured by Müller in *Zoologia Danica* under the name of *Patella anomala*: it is distinguished from *O. lævis* by its having numerous radiated decussating striæ, of which that species is destitute. How Müller, who knew well all its characters, and had examined it in its living state, could do so much violence to nature as to name it *Patella**, I confess myself completely at a loss

* "It is not easy to understand why that famous naturalist has so arranged it among the *Patellæ*, instead of constituting a particular genus, since it does not belong to the genus *Patella*, not only as being a bivalve, but also from the difference of the animal inhabitant.

"The

a loss to imagine; he does however seem, by his specific name *anomala*, to have doubted the propriety of placing it in that genus.

I now close my observations upon this subject, only adding the specific characters of the *O. norvegica*, and the newly-discovered species which I designate *O. lævis*.

Orbicula lævis.

O. valvulis tenuibus lævibus.

Tab. XXVI. *f.* 1.

Habitat in mari, saxis adhærens.

Orbicula norvegica.

O. valvula superior striis plurimis elevatiusculis ex vertice ad marginem decurrentibus.

Tab. XXVI. *f.* 2.

Syn. *Lamarck Anim. sans vertèbr.*

Müller Zool. Dan. i. *t.* 5. *p.* 14. Patella anomala.

Habitat in mari, ad littora, saxorum in cavitatibus affixa.

Obs. When any part of the *lower* valve does not lie close to the stone, the radiating striæ may be perceived decussating the striæ of growth.

The following observations, principally upon the genus *Crania* of Lamarck, will be found to be in a great measure connected

"The shell is very small, sprinkled all over with elevated points, which make it rough to the touch: its upper valve is larger, and has a projecting apex; the lower valve adheres to old shells and other hard substances in the depths of the North Sea.

"The animal which inhabits it is represented by two red masses, with two elongated arms, blue and fringed; the fringes thick, rather curled, yellow. It seems that Müller had not the means of observing it with sufficient accuracy, for he does not describe it with that precision which is generally observable in all his writings. He does not even speak of the hinge, of which it is true that he had no suspicion according to the idea which he had formed of the genus of the shell." *Bosc, vol.* ii. *p.* 243.

with

with the foregoing, and have been elicited by the same discovery.

From an attentive examination of two specimens of the shell described and figured in the *Linnean Transactions*, under the name of *Patella distorta*, I was led to suspect that it might be a bivalve shell, and probably related to the genus *Orbicula*, and belonging to the family of *Terebratulidea*. I have it now in my power to show that this suspicion is verified; for Mr. Bullock has obligingly communicated a stone from one of the Shetland islands, to which are attached several specimens of this shell (*Patella distorta*). Upon lifting one of these, I was not a little pleased to discover, in a dry state, the two fringed arms or tentacula common to, and characteristic of, the *Terebratulidea;* and, firmly adhering to the stone, another valve, white, extremely thin, except at its edges, and having *four* muscular impressions corresponding with those of the upper brown valve; but two of these muscular impressions are certainly so near together, that I do not wonder that, upon a slight examination, Lamarck should have described the genus *Crania* as having in the lower valve three oblique perforations. It therefore appears that this shell, instead of being a *Patella*, may properly be considered a bivalve shell, and that it belongs to Retzius's genus *Crania*, of which Lamarck gives the following characters:

> " Coquille composée de deux valves inégales, dont l'inférieure presque plane et suborbiculaire est percée en sa face interne de trois trous obliques et inégaux. La supérieure, très convexe, est munie intérieurement de deux callosités saillantes."

These characters however do not appear to me quite satisfactory. I would suggest the following as an amended generic character.

CRANIA.

Bivalve, inequivalve, nearly orbicular, compressed, fixed; upper

valve patelliform, with four internal muscular impressions; lower valve adhering, nearly flat, with four corresponding muscular impressions, two near the centre, approximating and nearly united, and two near the posterior margin, distant. No hinge.

Lamarck does not seem to have been acquainted with the animal inhabitant of this genus; and indeed our knowledge of it must necessarily remain very limited, until we shall have an opportunity of examining it immediately upon its being taken from its native deeps. All that can be distinguished in the dried specimen are the four ligaments or muscles which attach the two valves together, and the two fringed arms or tentacula.

It is obvious that this genus differs very materially from *Orbicula*, particularly in the manner in which it is attached; the whole of the lower valve of *Crania* being firmly attached and adhering closely to the stone, whereas the *Orbicula* adheres only by an apparently cartilaginous *foot*, which passes from within through the elongate aperture near the centre of the lower valve, and spreads over a surface of the stone equal to about one-eighth of the surface of the shell. In the appearance of the dried animal very little difference is observable between the two genera.

Lamarck gives as the type of the genus *Crania*, the *Anomia craniolaris* of Linné, a shell which is certainly very little known in this country. I have however seen specimens of it on a coral from the Mediterranean; and on some of these, the impressions on the attached valve, on account of their having been some time exposed, as I conceive, and being more liable to decomposition than the other parts of the shell, have been corroded away in part, so as to appear rather hollow. I hope it will not be thought irrelevant if I here attempt the characters of the two species of this genus with which I am at present acquainted.

1. CRANIA

1. CRANIA PERSONATA.

C. valvula superior tenuis lævis. TAB. XXVI. *f.* 3.

SYN. Anomia craniolaris. *Linn., &c.*

——— turbinata. *Poli*, ii. *p.* 189. *t.* 30.

Patella Kermes. *Humphrey.*

——— distorta. *Mont. Linn. Trans.* xi. *p.* 195. *t.* 13. *f.* 5.

Crania personata. *Lamarck*, *Anim. sans Vert.* 138.

Habitat in mari Mediterraneo, coralliis adfixa; et in mari Scotico, saxis adhærens.

Humphrey, who described the upper valve under the name of *Patella Kermes* many years ago, afterwards discovered his error; Montagu never had an opportunity of examining the shell in its natural situation, or he would have undoubtedly discovered his. The only difference observable between the specimens from Shetland and those from the Mediterranean, is in the thickness and irregularity of the lower valve; those from the latter sea being very thick and irregular; whereas, those from Shetland are much thinner, and more regular in their shape; but this difference I imagine may be easily accounted for from the different situation of the respective specimens; the one being found upon rugged old corals, and the other being attached to a comparatively smooth stone*.

2. CRANIA ANTIQUA.

C. valvula superior radiatim striata, striis elevatis, ex vertice ad marginem decurrentibus; valvula inferior posticè producta. TAB. XXVI. *f.* 4.

* Since this paper was read, I have seen Poli's figure of this shell, which he calls *Anomia turbinata*; he also gives several views of the animal inhabitant, under the name of *Criopus*, which is certainly strongly corroborative of my expressed opinion, founded upon the observation mentioned above, that it belongs to the family of *Terebratulidea*. I am concerned, however, to be under the necessity of stating, that Poli has confounded Müller's *Patella anomala* (the Orbicula of *Lam.*) with it, expressing his astonishment at Müller's not having observed the lower valve, and naming it *Patella*.

This is a fossil species, of which the two valves have been found in considerable abundance, but always separate, in a compact marly stratum, in the department de la Manche in Normandy, and communicated to my father by our very liberal friend C. Duherrissier de Gerville.

I had named the above species *C. producta*; but since the Paper was read I find it has been described by M. Defrance, and figured in the *Dictionnaire des Sciences naturelles* under the name of *C. antiqua*, which I have therefore adopted. It is also described in Lamarck's *Hist. Nat. des Anim. sans Vert. t.* vi. *part* 1. *p.* 239.

The delay which has attended the printing of this Paper gives me an opportunity of noticing two or three mistakes into which M. de Blainville and M. de Lamarck have fallen, upon receiving some specimens of the *Orbicula norvegica*. M. de Blainville* has confounded it with *Patella distorta* of Mont., and also with the *Criopus* of Poli, a name given by Poli to the animal alone of the *Crania personata*; but he refers it rightly to *Patella anomala* of Müller, and to the genus *Orbicula* of Lamarck.

Lamarck has fallen into the same mistake in referring Poli's *Anomia turbinata* to his own genus *Orbicula*; but, unhappily for science, he is obliged to see with the eyes of others; and this circumstance will account for his having made a new genus, constituted from a specimen sent to him by my father, of the *Orbicula norvegica*, under the name of *Discina*, and even for his having placed it in another family. The genus *Discina* ought therefore to be wholly erased from Lamarck's *Hist. Nat. des Anim. sans Vert. t.* vi. *p.* 236; and the description and greater part of the observations under it, might with propriety be transferred, to replace the description of his *Orbicula*, the observations to which might remain.

* *Bull. des Sciences*, May 1819.

REFE-

Fig. 1.

a

b

Fig. 2.

a

b

c

d

c

d

e

f

Fig. 3.

a

c

b

d

Fig. 3. e.

a

b

Fig. 4.

c

REFERENCES TO THE ACCOMPANYING FIGURES.

TAB. XXVI.

Fig. 1. ORBICULA LÆVIS.

a. Attached to a grey flint pebble, which is nearly coated by the root of an *Isis*.
b. Another view, to show the elevation.
c. Inside of the upper valve, showing the two fringed arms.
d. Inside of the lower valve.

Fig. 2. ORBICULA NORVEGICA.

a. A very young specimen.
b. A full grown one.
c. Specimen showing the fringed arms extended like rays beyond the shell.
d. Inside of the upper valve.
e. Inside of the lower valve.
f. Under part of lower valve.

Fig. 3. CRANIA PERSONATA.

a. Piece of sandstone, with several specimens of various sizes attached to it, from Orkney.
b. Inside of the upper valve, do.
c. Inside of the lower valve, do.
d. Ditto, with the dried animal, do.
e. Inside of a lower valve, from the Mediterranean.

Fig. 4. CRANIA ANTIQUA.

a. Outside of upper valve. *b*. Inside of do.
c. Inside of lower valve.